Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules	)	WT Docket No. 07-100
	)	
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	
	)	
	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
	)	

To: The Commission

COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

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EXECUTIVE SUMMARY

Southern Company Services, Inc. ("Southern Company") on behalf of itself and its electric operating company affiliates - Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company – support the FCC's proposals to expand eligibility for primary licensing in the 4.9 GHz band to electric utilities and other Critical Infrastructure Industries ("CII") as defined in Section 90.7 of the FCC's rules. Access to this band could provide utilities with additional options for supporting "Smart Grid" communications and other services in support of their provision of safe and reliable electric service to the public.

Southern and other utilities have been very reluctant to seek access to the 4.9 GHz band under the current rules, which permit a government "sponsor" to unilaterally withdraw its sponsorship of a non-government organization ("NGO") and thereby deny the NGO further access to the spectrum. Expanded eligibility for licensing in the 4.9 GHz band to CII will improve the availability, variety and economics of equipment used in the band, and could promote development of wider area networks with improved coverage for both public safety and CII.

Southern agrees that the 4.9 GHz band could supplement the 700 MHz public safety broadband spectrum and could be used be used for backhaul. It will not be necessary for the FCC to make FirstNet directly eligible for licensing in the 4.9 GHz band because FirstNet will necessarily be working closely with state and local government agencies on the construction, management and operation of the public safety broadband network, and those entities will be able to enter appropriate agreements with FirstNet for access to the 4.9 GHz band as needed.

Southern supports use of a coordination database similar to that used for the 70/80/90 GHz millimeter wave bands. Southern also agrees that channel aggregation should be permitted in the 4.9 GHz band to accommodate various applications, but that it is unnecessary to designate any of this spectrum for narrowband use on a primary basis. Although technical standards are critical to development of the 700 MHz public safety bands for interoperability and roaming, those same concerns do not apply to the 4.9 GHz band. Southern therefore recommends that the Commission continue to allow for innovation in the 4.9 GHz band according to user requirements.

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To: The Commission

COMMENTS OF
SOUTHERN COMPANY SERVICES, INC.

Southern Company Services, Inc. ("Southern"), on behalf of itself and its operating affiliates, hereby submits its comments in response to the Federal Communications Commission's request for comments on amendments to its rules governing access to and use of the 4940-4990 MHz ("4.9 GHz") band.[1] As explained herein, Southern strongly supports the Commission's proposal to expand eligibility for licensing in this band to utilities and other critical infrastructure industry ("CII") entities.

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[1] *Fourth Report and Order and Fifth Further Notice of Proposed Rulemaking* in WT Docket No. 07-100, PS Docket No. 06-229, and WT Docket No. 06-150, FCC 12-61, released June 13, 2012 ("*FNPRM*"). By *Order*, DA 12-1540, released September 26, 2012, the deadlines for Comments and Reply Comments in this proceeding were extended to November 1, 2012, and November 30, 2012, respectively.

I. INTRODUCTION

Southern Company Services, Inc. is a wholly-owned subsidiary service company of Southern Company, a super-regional energy company in the Southeast United States. Southern Company also owns four electric utility subsidiaries – Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company – which provide retail and wholesale electric service throughout a 120,000 square mile service territory in Georgia, most of Alabama, and parts of Florida and Mississippi. Members of the Southern Company family use a variety of communications technologies, including FCC licensed radio spectrum, to support the safe and efficient delivery of energy services to their customers. Southern appreciates the opportunity to comment on the FCC's proposals to encourage more effective use of the 4.9 GHz band.

II. COMMENTS

A. Expanded Eligibility and Alternate Licensing

The FCC's current rules, in Subpart Y of Part 90, only allow the 4.9 GHz band to be used by state or local government entities or by non-government organizations ("NGOs") that have authorization or sponsorship from a government public safety agency. These rules were adopted in 2003 on the assumption that there would be "considerable activity in the band, even with a user pool primarily limited to traditional public safety entities," and that the rules would "encourage public safety entities to explore strategic partnerships" with NGOs concerning use of this spectrum.[2] At that time, the Commission noted that even the public safety community had "acknowledged the importance of interoperability with [utilities, railroads, and similar entities]

[2] *Memorandum Opinion and Order and Third Report and Order* in WT Docket No. 00-32, 18 FCC Rcd 9152, 9160 (2003).

during both times of emergency and non-emergency." Moreover, the Commission cited to its earlier finding that although the primary function of power, petroleum, and railroad industries,

> is not necessarily to provide public safety services, the nature of their day-to-day operations provides little or no margin for error and in emergencies they can take on an almost quasi-public safety function. Any failure in their ability to communicate by radio could have severe consequences on the public welfare.[3]

The Commission expressed its optimism that "the mutual need for interaction will foster cooperation and sharing arrangements, and [it] encourage[s] state and local public safety organizations to work with critical infrastructure industry to ensure that in times of crises they too have access to this critical spectrum resource."[4]

However, in the last ten years, use of the 4.9 GHz band has languished and strategic partnerships between public safety entities and NGOs for the use of this spectrum have not arisen to any noticeable degree. Under the current rules, a government entity may unilaterally terminate its sponsorship of a non-government entity's use of the spectrum at any time, with or without cause. NGOs have been understandably reluctant to enter agreements whereby their investment in infrastructure, and their use of a vital communications resource, could be rendered worthless at any time, including when that resource is needed most. Accordingly, the current rules for the 4.9 GHz band provide very little incentive for Southern Company and other utilities to explore possible public/private partnerships or other arrangements that would help promote the build-out of 4.9 GHz infrastructure and more effective use of this spectrum.

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[3] 18 FCC Rcd at 9162, citing to Implementation of Sections 309(j) and 337 of the Communications Act of 1934, as Amended, *Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 99-87, 15 FCC Rcd 22709, 22746 (2000).

[4] 18 FCC Rcd at 9163.

It has been well documented that access to radio spectrum is essential to critical utility operations and to the safe, reliable, and efficient delivery of electric power to the public.[5] In the context of so-called Smart Grid technologies, this includes critical command and control applications such as load management and supervisory control and data acquisition ("SCADA") systems.[6]

In addition, in order to maintain the levels of service, safety, and reliability needed by the public – and increasingly mandated by federal and state regulators – utility communications systems must also be designed and operated with reliability in mind, both to meet "everyday" needs and especially during service outages, natural or man-made disasters, and other emergency situations. Reliability also means that utility communications systems must be instantaneously available at any time to handle large amounts of traffic, such as during or following major emergencies when major repair or restoration of critical utility service and infrastructure must be

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[5] As described by the National Telecommunications and Information Administration ("NTIA"): "SCADA systems are generally computer-controlled radio communications links that allow a [utility] user to control and monitor power generation, storage and distribution systems without having to deploy staff where the equipment is located … As modern utility systems have increased in complexity, SCADA systems have become critical components of their command and control infrastructure. These systems help to automate tasks like opening and closing circuit breakers, monitoring system reliability, and monitoring alarms for overload conditions. Marshall W. Ross and Jeng F. Mao, *Current and Future Spectrum Use by the Energy, Water, and Railroad Industries,* U.S. Department of Commerce, National Telecommunications and Information Administration, Jan. 2002 at 3 – 10.

Southern's SCADA system enables its operating companies to monitor transmission and distribution operations in real time; quickly identify potential or actual problems (such as outages); adjust voltages and deenergize lines to efficiently manage load levels, prevent or contain outages, and ensure safety of the public (*e.g.*, from downed lines, etc.); and collect and transmit voluminous amounts of data between remote facilities and headquarters, thus increasing the efficiency of field inspection and maintenance operations and ensuring the integrity of the power grid.

[6] *See also Communications Requirements of Smart Grid Technologies*, US Department of Energy, Oct. 5, 2010, at 39 – 40 (discussing the latency and reliability requirements for SCADA systems) ("DOE Smart Grid Report").

carried out as quickly as possible while any damages or danger to the public from power surges, downed power lines, etc., are minimized. For these reasons, Southern and other utilities are interested in access to the 4.9 GHz band to support their critical Smart Grid and operational communications needs.

There is no "one-size-fits-all" solution to Smart Grid communications or for other communications services needed to support the provision of CII service. As the Department of Energy ("DOE") recently noted, utilities need to explore various options to meet their communications requirements, including opportunities for sharing spectrum with public safety, the federal government, and other users, and that it is even possible that multi-mode architectures may emerge as utilities experiment with different alternatives.[7] DOE further suggested that the "goal is to continue to do the necessary homework to identify and remove any obstacles and facilitate as many options as possible, so that the optimal choice can be made for a particular Smart Grid deployment."[8] Southern agrees, and believes that the 4.9 GHz band is one of the spectrum bands that would be of benefit to utilities in maintaining the nation's critical infrastructure.

Public utilities and other CII entities have long played a vital role in directly supporting public safety services. Not only do utilities provide or restore critical services such as electric power, but utilities are also frequently called on to provide immediate assistance to first responders. For example, utilities are often called on by public safety agencies to immediately deenergize downed power lines or to cut off electric power or natural gas service to burning structures in order to mitigate hazards to firefighters such as through electrocution or explosion.

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[7] DOE Smart Grid Report, at 60.

[8] *Id.*

Immediate restoration of electric power is also often needed to enable public safety to carry out its mission.[9]

While utilities support public safety and provide essential utility services to the public, state and local "public safety" agencies are not responsible for day-to-day provision of essential public services such as electricity and have little incentive to "sponsor" a utility for licensing in the 4.9 GHz band. Thus, the current eligibility rules for the 4.9 GHz band do not correlate with marketplace or political realities.

For example, microwave is an ideal technology for communications into and out of electric substations. It would be prohibitively expensive to run fiber optic cables into all of an electric utility's substations, and unless the fiber system were designed in a ring architecture, communications with one or more substations could be lost due to a single fiber cut. Moreover, because of the phenomenon of "ground potential rise" ("GPR"), additional engineering and safety precautions must be undertaken if copper-based communications lines are installed at an electric substation or any other location where high voltages are present and could be induced onto the communications lines in the event of a fault to ground. Microwave communications, such as those that can be accommodated in the 4.9 GHz band, are very cost-effective, are highly reliable, and do not implicate any concerns with GPR.

[9] Recent events have highlighted weaknesses in back-up power systems used by some commercial carriers, with significant impacts to public safety. *See* Comments of Fairfax County, Virginia, in PS Docket No. 11-60, filed August 17, 2012. While damage and disruption to commercial power systems cannot be totally prevented, the Commission can help utilities prevent unnecessary outages and restore service more quickly by ensuring that utilities have adequate means of communications available to help them with system monitoring and control.

Southern therefore strongly supports the Commission's proposal to afford eligibility for licensing in the 4.9 GHz band, on a primary basis, to Critical Infrastructure Industry entities as defined in Section 90.7 of the Commission's Rules:

> *Critical Infrastructure Industry (CII).* State, local government and non-government entities, including utilities, railroads, metropolitan transit systems, pipelines, private ambulances, volunteer fire departments, and not-for-profit organizations that offer emergency road services, providing private internal radio services provided these private internal radio services are used to protect safety of life, health, or property; and are not made commercially available to the public.

This definition is premised on the definition of "public safety radio services" in Section 309(j)(2) of the Communications Act of 1934, as amended, which reflects congressional support for making adequate spectrum resources available for CII entities, outside of the competitive bidding process, so that they can fulfill their public service obligations.[10] The Commission should not require a sharing agreement for CII entities eligible for primary licensing for the reasons discussed above.

In the *FNPRM* in this proceeding, the Commission has asked whether expanding eligibility might improve the availability, variety, and economics of equipment used in the band, and ultimately for the benefit of public safety.[11] Southern believes that a larger user base, comprised of CII entities having similar requirements to public safety, will improve the availability and cost of equipment in the band, and lead to development of new products with additional service features. It is well known that in bands allocated exclusively to public safety

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[10] Section 309(j)(2) was added by the Balanced Budget Act of 1997, Pub. L. No. 105-33, Title III, 111 Stat. 251 (1997). See also the accompanying Conference Report explaining that even though the services provided by these entities are private in nature, they protect the safety of life, health or property and are not made commercially available to the public. H.R. Rep. No. 105-217, 105th Cong., 1st Sess., at 572.

[11] *FNPRM* , para. 43.

equipment tends to be higher priced and to lack service features that would probably be available in a larger and more competitive market. Expanding eligibility at 4.9 GHz to CII could significantly improve the market for radio equipment while limiting the potential for use of the band to become congested. In addition, expanded eligibility and the promotion of a more competitive marketplace for equipment could promote development of wider area networks at 4.9 GHz, with improved coverage for both public safety and CII.

Southern does not support a requirement for an automatic shutdown feature in 4.9 GHz equipment. If eligibility for primary licensing in the band is limited to public safety and CII entities, a shutdown feature could cause serious disruption to vital communications and/or damage to infrastructure if activated imprudently. As a practical matter, the inclusion of such a feature would probably limit use of the band to non-essential communications, thereby defeating the allocation of the band for use in critical communications networks. Moreover, automatic shutdown would be contrary to the goal of encouraging interoperable networks. Use of a coordination database and system registration, as discussed below, will provide licensees with an easy means of identifying potentially conflicting operations in a given area and without the need for an automatic shutdown feature.

The Commission has asked whether it should require single jurisdiction licensing, such as by requiring all agencies or departments with a given jurisdiction to operate under a single license.[12] The Commission has also asked if CII and traditional public safety entities in the same jurisdiction, such as a power utility and a fire department, should be forced to share a single 4.9 GHz license. Jurisdictional licensing might be appropriate for all users associated with the same state or municipal government, but it would introduce a number of complications if private

[12] *FNPRM* , para. 45.

sector CII entities were compelled to participate in such a jurisdictional license. Aside from municipally-owned utilities, the service territories of most electric utilities do not conform to municipal or county boundaries. If a CII entity were required share a jurisdictional license with political subdivisions, it would increase administrative burdens for all parties, and the CII entity could be subject to overlapping and conflicting terms and conditions from the individual jurisdictional licensees with which it is forced to share.

B. Complement to 700 MHz Broadband Networks

Southern agrees that the 4.9 GHz band could supplement the 700 MHz public safety broadband spectrum and could be used for backhaul for 700 MHz systems. Southern understands that cellsites for 700 MHz systems using LTE technology may be spaced at five to ten mile intervals. The limited range of 4.9 GHz systems would make them ideal for backhaul, and would be a very efficient use of this spectrum.

The Commission has asked whether FirstNet should be eligible for a 4.9 GHz license. As noted in the *FNPRM*, FirstNet is an "independent authority" within NTIA, and is therefore not a state or local government entity, nor is it a nongovernmental organization authorized by a governmental entity whose primary mission is the provision of public safety services. FirstNet is therefore not eligible for direct licensing under the current rules. However, the current rules allow 4.9 GHz licensees to enter into sharing agreements or other arrangements with entities that do not meet these eligibility requirements. To the extent FirstNet will necessarily be working very closely with state and local government agencies on the construction, management and operation of the public safety broadband network, eligible government entities could enter appropriate agreements with FirstNet for access to the 4.9 GHz band and without the need for the Commission to amend its rules to make FirstNet, a federal entity, eligible for direct licensing on nongovernment spectrum.

C. Coordination and Licensing

Southern agrees with the Commission's proposal to require registration of 4.9 GHz facilities in a database that would allow coordinators to select the most appropriate frequencies for new applicants.[13] The database created for the 70/80/90 GHz millimeter wave bands provides a suitable model for a database that could be used for the 4.9 GHz band. Southern agrees that to the extent the 4.9 GHz band will be used for point-to-point links the database should include receiver information.

Southern does not believe the database paradigm used for TV White Spaces (TVWS) devices would be appropriate for the 4.9 GHz band. It is not clear that the additional expense of maintaining a real-time dynamic access database and incorporating geolocation capabilities into all 4.9 GHz equipment would be justified. Reliance on almost real-time access to a dynamic access database could potentially cause loss of critical communications service due to database errors, malfunctions of the coordination system, or loss of connectivity with the database.

D. Technical and Operational Issues

The Commission has raised a number of questions about technical and operational issues associated with the 4.9 GHz band. Southern offers the following brief comments on several of these issues:

1. Channel Aggregation. Southern agrees that greater flexibility in bandwidth should be afforded. However, Southern does not believe that any of the 1-MHz bandwidth channels at the edges of the 4.9 GHz band should be designated for narrowband use on a primary basis. The 4.9 GHz band is ideal for broadband applications, and other bands are available for narrowband operations (*e.g.*, 900

[13] *FNPRM*, paras. 27-33.

MHz point-to-point allocations under Part 101). Southern also does not believe that certain channels should be designated for specific uses, such as point-to-point, mobile, etc. Allowing coordinators to adjust uses among available bandwidth in an area will result in more efficient use of the spectrum.

2. Polarization. Southern does not believe that the Commission should specify the polarization to be used in various types of devices. As noted above, coordinators can make appropriate recommendations regarding polarization to maximize the number of users that can be accommodated in a given area.

3. Aeronautical Mobile Use. The Commission should not permit aeronautical mobile use in the 4.9 GHz band. Such use has the potential to impact a large number of terrestrial services, even if such use is restricted to "secondary" status. It would also be difficult to assess the interference potential from such operations during routine frequency coordination.

4. Standards. The Commission previously declined to adopt technical standards on interoperability in the 4.9 GHz band because of (1) the variety of services supported by the band, and (2) concern that standards would lock the band into then-current technology and not afford the benefits of emerging broadband technologies. Southern agrees that these concerns are still valid, and that it would not be prudent for the Commission to adopt interoperability standards. Use of this band is very different from the 700 MHz public safety bands where roaming and interoperability are fundamental to the creation of a nationwide public safety broadband network. By contrast, systems deployed at 4.9 GHz will likely be used

to meet specific user needs in specific areas or regions. Moreover, interoperability standards are not an issue for point-to-point communications. Adoption of standards would stifle innovation in equipment and applications for this band.

III. CONCLUSION

Southern Company appreciates the Commission's interest in reviewing the rules and policies for access to the 4.9 GHz band to ensure that it will be used effectively. Southern believes that expanding eligibility to utilities and other CII entities on a primary basis, and without the need for a "sponsorship" agreement that can be unilaterally revoked at any time, will encourage more public-private partnerships for infrastructure development in the 4.9 GHz band and, potentially, other bands such as the 700 MHz band. Expanding eligibility to CII entities will ensure that the band is used to support public safety and will improve the availability and economics of equipment, and without concern that the band will become congested with commercial users.

WHEREFORE, THE PREMISES CONSIDERED, Southern Company Services, Inc. respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

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